

Translation

PATENT COOPERATION TREATY

PCT/DE2003/002452



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 1033WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2003/002452	International filing date (day/month/year) 21 July 2003 (21.07.2003)	Priority date (day/month/year) 22 July 2002 (22.07.2002)
International Patent Classification (IPC) or national classification and IPC G01N 33/543		
Applicant MICRONAS HOLDING GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>8</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 19 February 2004 (19.02.2004)	Date of completion of this report 07 February 2005 (07.02.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2003/002452

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-13, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-32, filed with the letter of 23 September 2004 (23.09.2004)
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/DE 03/02452

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

...

6. ...

1. **Amendments** (PCT Article 41(2))

1.1 Claims 1 and 27 to 32: a "method for producing a sensor surface" is not defined in the description. Only the preparation of a sensor surface and a kit for producing a sensor surface are disclosed in the description.

1.2 Although the production method was not disclosed verbatim in the original description, it is implicit from the disclosure of the preparation of a sensor surface, the various embodiments of the sensor surfaces per se and the example.

1.3 Therefore the amendments meet the requirements of PCT Article 41(2).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/DE 03/02452

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-32	YES
	Claims		NO
Inventive step (IS)	Claims	1-32	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-32	YES
	Claims		NO

2. Citations and explanations

1. **Novelty/Inventive step** (PCT Article 33(2) and (3))

1.1 As already stated in the written opinion, D1 is considered the prior art closest to the subject matter of claim 1. It discloses a sensor surface from which the subject matter of claim 1 differs in that the blocking reagent already comprises a photoreactive crosslinker before the blocking reagent is covalently immobilized on the sensor surface. The use of a blocking reagent of this type results in the deactivation of all the points available for non-specific bonds, i.e. all the points between the groups which comprise a probe, as well as the adjacent areas comprising a probe. Therefore claim 1 is novel (PCT Article 33(2)). This difference enables the signal-to-noise ratio to be improved and thus the sensor sensitivity to be increased.

1.1.1 Consequently the problem to be solved can be considered that of preparing a sensor surface having an improved signal-to-noise ratio and therefore increased sensitivity. The solution is to use a blocking reagent comprising at least one

photoreactive crosslinker.

1.1.2 The citations (D1 to D3) all disclose only known blocking reagents, not blocking reagents which comprise at least one photoreactive crosslinker. The prior art contains no reason to activate the blocking reagents before they are bound to the sensor surface or to provide the blocking reagents with a photoreactive crosslinker. Therefore a person skilled in the art would not find anything in the prior art to prompt him to solve the above problem in the way proposed in claim 1.

1.1.3 Consequently the subject matter of claim 1 can be considered novel and inventive and hence meets the requirements of PCT Article 33(2) and (3).

1.2 D1 discloses blocking reagents from which the subject matter of claims 20 to 23 differs in that the blocking reagent comprises a photoreactive crosslinker. Claims 20 to 23 are therefore novel (PCT Article 33(2)). The technical effect of this difference is that the blocking reagent can be bound covalently to all the points or areas on the surface, namely irrespective of any preceding activation.

1.2.1 The problem addressed by the subject matter of claims 20 to 23 can be considered that of modifying a blocking reagent such that it can covalently bind all points or areas of the surface, irrespective of any preceding activation. This problem is solved by activating the blocking reagent before it is covalently immobilized on a sensor surface, owing to the presence of at least one photoreactive

crosslinker.

1.2.2 The citations (D1 to D3) all disclose only the covalent binding of known blocking reagents to previously activated sensor surfaces and do not prompt a person skilled in the art to activate the blocking reagents before they are bound to the sensor surface. Therefore a person skilled in the art would see no reason first to activate the blocking reagents with a photoreactive crosslinker in order to deactivate all points or areas of the surface irrespective of any preceding activation.

1.2.3 The subject matter of claims 20 to 23 is therefore inventive and meets the requirements of PCT Article 33(3).

1.3 D1 discloses a method of producing sensor surfaces from which the subject matter of claim 27 differs in that the blocking reagent used comprises a photoreactive crosslinker. Therefore claim 27 is novel (PCT Article 33(2)). This difference results in an improved signal-to-noise ratio of the sensor surface, and hence increased sensor sensitivity.

1.3.1 The problem to be solved by the subject matter of claim 27 can be considered that of devising a method of producing a sensor surface such that it has an improved signal-to-noise ratio. The solution according to claim 27 is to activate the blocking reagent before it is immobilized on a sensor surface.

1.3.2 The two methods (D1 and the application) use the same photoreactive groups for covalently

immobilizing the blocking reagent on a sensor surface. The citations (D1 to D3) all disclose only the covalent binding of known blocking reagents to activated sensor surfaces and do not prompt a person skilled in the art to activate the blocking reagents before they are used in order to deactivate a sensor surface. Therefore a person skilled in the art would see no reason first to activate the blocking reagents with a photoreactive crosslinker in order to improve the signal-to-noise ratio.

1.3.3 Therefore the subject matter of claim 27 can be considered novel and inventive and hence meets the requirements of PCT Article 33(2) and (3).

1.3.4 The subject matter of dependent claims 28 to 31 is therefore also inventive and meets the requirements of PCT Article 33(2) and (3).

1.4 Consequently all the claims (1 to 32) are novel and inventive, and the application thus meets the requirements of PCT Article 33(2) and (3).

2. **Industrial applicability** (PCT Article 33(4))

2.1 The subject matter of claims 1 to 32 meets the requirements of PCT Article 33(4).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/DE 99/02452

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Further observations

- 1.1 Contrary to the requirements of PCT Rule 5.1(a)(ii), the description did not cite D1 or the relevant prior art contained therein.